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K101-D/K102-D LOGIC ANALYZERS

K102-D LOGIC ANALYZER

OPERATING MANUAL ADDENDUM

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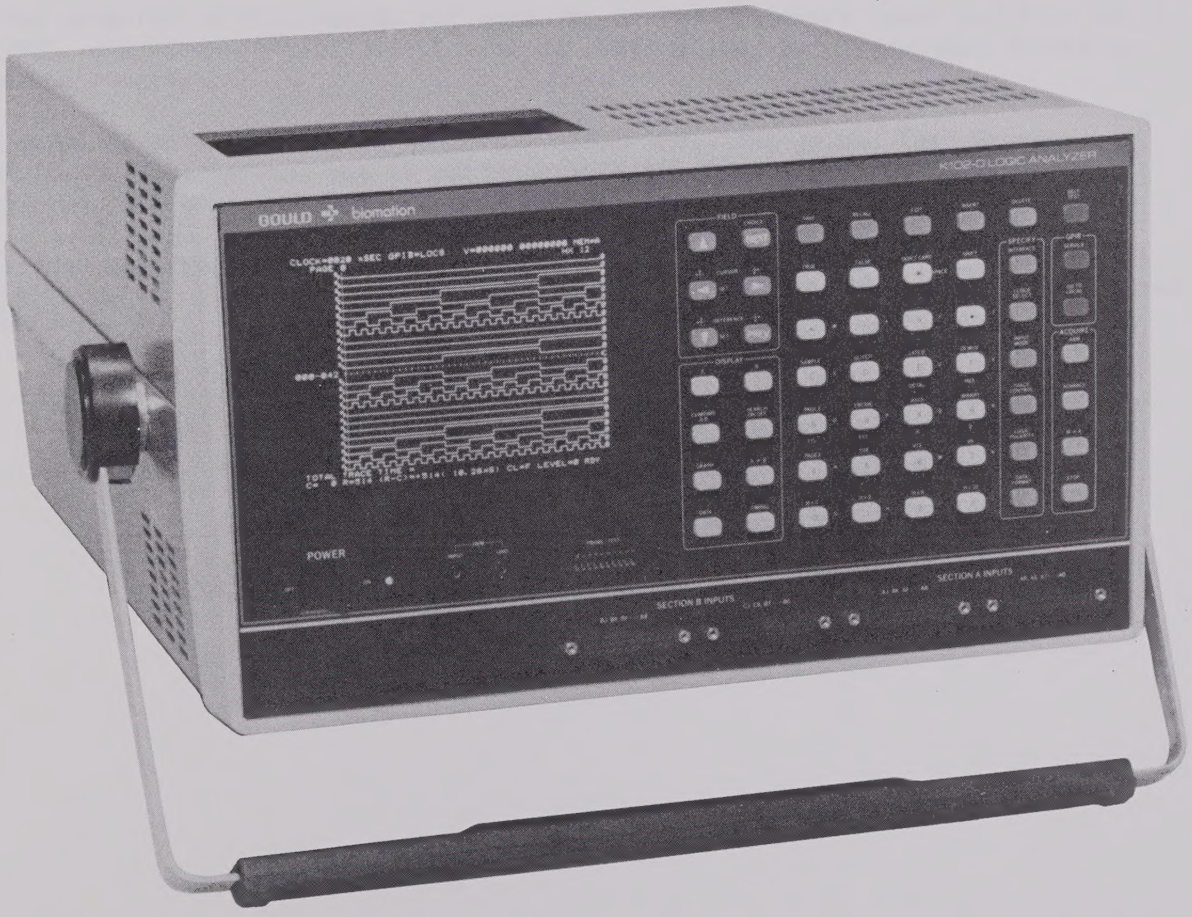

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This addendum describes the K102-D Logic Analyzer which is similar in appearance and operating capabilities to the K101-D equipment. Due to this similarity of equipment features, much of the information described in the K101-D Logic Analyzer Operating Manual also applies to the K102-D.

This addendum is to be used with, and inserted in front of the K101-D Operating Manual, Publication Number 0114-0100-10. Information in this addendum is presented in a difference-data format to emphasize specific features of the K102-D that differ from the K101-D. The user must therefore refer to the K101-D Operating Manual for information that is common for both units, and refer to this addendum for comparable information that is unique for the K102-D equipment.

The material in this manual reflects the Control Firmware level valid on May 2, 1983, and is up-to-date at the time of publication, but is subject to change without notice.

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Chapter		Page
1	PRODUCT FEATURES	
	INTRODUCTION	1-1
	DIFFERENCES IN K102-D and K101-D CHARACTERISTICS	1-1
2	DESCRIPTION OF K102-D DIFFERENCES	
	Section 1 GENERAL INFORMATION.	2-1
	Section 2 PRINCIPLES OF LOGIC ANALYSIS	2-1
	Section 3 DETAILED DESCRIPTION	2-1
	DETAILED DESCRIPTION.	2-1
	SIGNAL INPUTS	2-1
	Enable Clocks.	2-2
	TRACE MEMORY.	2-2
	DATA FORMATS.	2-2
	Recording Analysis Displays.	2-2
	ACCESSORIES SUPPLIED.	2-2
	Section 4 USER CONTROLS AND DISPLAYS	2-3
	PROBE CONNECTIONS	2-3
	Clock Select	2-3
	Input Mode	2-3
	Trace Control.	2-3
	Logic Polarity	2-3
	Section 5 SPECIFYING RECORDING PARAMETERS.	2-4
	LOGIC POLARITY.	2-4
	Latch Mode	2-5
	CLOCKING MODE OVERVIEW.	2-5
	DATA FORMAT SCREENS	2-5
	FIXED FORMATS	2-5
	MIXED RADICES, USER-DEFINED SEQUENCE.	2-6
	Section 6 MAKING A RECORDING	2-6
	Section 7 RECORDING ANALYSIS	2-6
	SELECTING VERTICAL DISPLAY LIMITS	2-6
	TIMING DISPLAY.	2-6
	VERTICAL DISPLAY EXPANSION AND PAGING	2-6
	Section 8 APPLICATIONS	2-6
	Section 9 COMMUNICATIONS	2-7
	Section 10 MEASUREMENT CONFIDENCE.	2-7
	Section 13 GLOSSARY.	2-7
	Section 14 INPUT CONNECTION GUIDE AND SETUP GUIDE.	2-7
	INPUT CONNECTION GUIDE.	2-7
	SETUP GUIDES.	2-7

PRODUCT FEATURES

INTRODUCTION

The model K102-D Logic Analyzer, developed by Gould Inc., Design and Test Systems Division, is similar to the top-of-the-line model K101-D Logic Analyzer equipment, described in the K101-D Operating Manual. Operating characteristics of the K102-D are also the same as the K101-D, except for the differences specified in this addendum.

The physical appearance of both units, including the control panel arrangement, are identical except for differences in the number of input connectors located at the lower edge of the front panel. The K102-D employs four connectors to accept 32 high-speed data inputs and 8 clock inputs. Both the K101-D and K102-D units operate at the same internal speed of 100 MHz and external speed of 50 MHz.

DIFFERENCES IN K102-D and K101-D CHARACTERISTICS

This addendum is organized to present only the unique differences of the K102-D equipment relative to information contained in the K101-D Operating Manual. The difference-data discriptions in this addendum are presented to correspond with sections and paragraph headings of the K101-D Operating Manual. If no differences exist for a given area of coverage, the associated text information is omitted.

The K102-D differences for equipment features and operating characteristics are summarized in Table 1-1 with details provided in subsequent pargraphs. The detailed information coincides with the Section and Paragraph numbers in the K101-D Operating Manual. Text changes applicable for the K102-D are indicated by an underline for the changed information.

Table 1-1. Summary of K102-D Differences

ITEM	DESCRIPTION
Input Characteristics:	
1) Data Inputs	32 External Lines, Addresses and Data
2) Clock Inputs	6 Sample Clocks: • AND clocks = CJ, BJ, AJ • OR Clocks = CK, BK, AK 2 Enable Clocks = AR, AS
3) Section	2 Sections, A and B with set of four input probes with 10 inputs each: • Section A Data = A0-A7; Clocks = AR, AS Data = A8-AF; Clocks = AJ, AK • Section B Data = B0-B7; Clocks = CJ, CK Data = B8-BF; Clocks = BK, BJ
Display Characteristics:	
4) Clock Select Menu 5) Input Mode 6) Trace Control 7) Logic Polarity 8) Data Format 9) Compare A/B Display 10) Timing Display 11) Graphic Display	• All K102-D display configurations indicate Section Inputs for A and B only, consisting of 32 sample inputs (or channels), 6 sample clock inputs and 2 latch clock enable inputs • Data displays omit references to Section C inputs and the display data columns are left justified to indicate Sections A and B input only. • Bit patterns associated with Section C input (e.g., C_0 C_1 C_2 C_3 C_4 C_5 C_6 C_7) are deleted from the display and data is presented for A_0 A_1 A_2 A_3....B_0 B_1 B_2 B_3... to indicate Section A and B input.

Section 1 GENERAL INFORMATION

Substitute K102-D in lieu of K101-D throughout this section. This difference also applies throughout the manual.

Section 2 PRINCIPLES OF LOGIC ANALYSIS

Figure 2-3. The example trace display shows data lines for Section Input C. The K102-D contains Section Inputs A and B only.

Figures 2-4 and 2-5. The example display shows data lines for Section Inputs A, B and C. The K102-D contains Section Inputs A and B only.

Section 3 DETAILED DESCRIPTION

Paragraph 3.2 DETAILED DESCRIPTION

The unit has 32 data inputs which feed a pipeline of three high-speed registers, each 36 bits wide (32 data bits plus 4 trace-level tracking bits).

Data from the pipeline registers are evaluated for transfer to the actual trace memory M (which is 512 words of 36 bits each) according to the current conditional trace control specifications set by the user.

Eight separate external clocks (six sample clocks and two latch enables) can be combined, using menu specified Boolean expressions, to obtain comprehensive samples for powerful software monitoring.

Separate clocks may be defined for each of two sections of 16 data inputs (B and A), or a single master clock may be used to sample two sections simultaneously.

Paragraph 3.3.1 SIGNAL INPUTS

a. Number: Total of 40; 32 sample inputs and 8 clock inputs

b. Input Assignments: All inputs are assigned to one of two sections labeled A or B

Paragraph 3.3.1 SIGNAL INPUTS (cont'd)

3. Latch: It allows you to either hold or pass data to half or all the sample registers of each section (A or B) based on the status of separately assignable, latch enable clock expressions.

4. Demultiplex: In demultiplex mode, the data inputs to the lower byte group of the selected section (A or B) are buffered and then sent to both groups of that section.

Paragraph 3.3.2.2 Enable Clocks

a. Inputs: Total of two (two on the lower group (7-0) of Section A).

b. Operation: Resultant enable clocks used when samples from section A or B are taken in Latch Mode.

c. AND enables: Not applicable for K102-D

d. OR enables: Up to two (AR, AS). User-specified logic level.

Paragraph 3.3.3 TRACE MEMORY

a. Size: Memories M, A, and B are each 36 bits wide (32 bits for data inputs...).

c. Search: The unit accepts up to a 32-bit pattern through the Data Format display. The search pattern is independent of the original criteria which caused each 32-bit record to be saved.

Paragraph 3.3.4 DATA FORMATS

Multiple menu screens allow the specification of how all 32 signal inputs are to be shown.

Paragraph 3.3.7.2 Recording Analysis Displays

a. Data: Presents data up to 32 columns wide as determined by the currently specified Data Format display.

Paragraph 3.3.11 ACCESSORIES SUPPLIED

a. Probes: Set of four input probes with ten inputs each.

Section 4 USER CONTROLS AND DISPLAYS

Paragraph 4.2.1 PROBE CONNECTIONS

Four connectors for probes are located across the bottom of the front panel. The connectors are grouped in sections of two probes each and labeled, SECTION B INPUTS and SECTION A INPUTS. Each section can receive 16 sample inputs and 4 external clock inputs, for a total of 32 sample inputs and 8 external clock inputs.

Figure 4-1. K102-D front panel configuration contains four input connectors.

Paragraph 4.5.2.2 Clock Select

Table 4-2. Clock Entry Possibilities

c. Clocks

Enable
(AR + AS)

Paragraph 4.5.2.3 Input Mode

Table 4-3. Input Mode Entry Possibilities

Input modes: Demux* (Xf-X8 only; X = A or B)

Paragraph 4.5.2.4 Trace Control

The execution of each command within a control level can be conditional to a uniquely defined data pattern (of up to 32 bits) and a delay count.

Paragraph 4.5.2.5 Logic Polarity

The Logic Polarity menu allows the user to specify negative or positive convention logic on any of the 32 sample inputs from the probes.

Figure 4-15.	Reference to CRT Screen is K102-D.
Figures 4-16, 4-17, 4-18, 4-19.	K102-D display indicate Sections A and B only.
Figure 4-20.	K102-D display indicates clocks for Sections A and B only.
Figure 4-21.	K102-D display indicates 32 channels selected.
Figures 4-22, 4-23, 4-25, 4-26.	K102-D display indicates data inputs for Sections A and B only.
Figures 4-28, 4-29, 4-30.	K102-D display indicates inputs for Sections A and B only.
Figures 4-31 through 4-35.	K102-D display indicates input fields for Sections A and B only.
Figure 4-38.	K102-D display indicates inputs for Sections A and B only.

Section 5. SPECIFYING RECORDING PARAMETERS

Paragraph 5.4 LOGIC POLARITY

The Logic Polarity screen allows you to select polarity for all 32 data inputs.

Figures 5-3 and 5-4.	K102-D displays inputs for Sections A and B only.

Paragraph 5.5.1

However, in all clock select screens, the enable clock expressions for each section (A or B) are used only when either Latch or Demux mode is selected for all or part of that section.

Paragraph 5.5.1.3 Latch Mode

It allows you to either hold or pass data to half or all the sample registers of each section (A or B) based on the status of separately assignable latch enable clock expressions.

Figure 5-9. K102-D displays inputs for Sections A and B only.

Paragraph 5.6.2 CLOCKING MODE OVERVIEW

K102-D modes employ Section Input A or B only as follows:

a. Internal

b. Internal Extended

c. External Single-Phase

d. External Multi-Phase

e. Mixed Single-Phase

f. Mixed Multiphase

Paragraph 5.7 DATA FORMAT SCREENS

By changing the Data Format screen specifications, you can control the manner in which the 32 data inputs of the K102-D are grouped and displayed.

Paragraph 5.7.1 FIXED FORMATS

They provide a fixed display of all 32 data inputs in the order of BF through A0. No editing is available in fixed mode.

a. Fixed hexadecimal: Each section (B and A) forms a separate word (see figure 5-20).

Paragraph 5.7.3 MIXED RADICES, USER-DEFINED SEQUENCE

Up to 32 separate columns of data characters can be specified for simultaneous display.

Each data input is identified first by its section (A or B) and then by its location within that section as input (F through 0). Use direct entry (A or B followed by F through 0) to identify the desired data input for position.

Figure 5-24.

Note: Using any of the 32 data inputs whenever you want, you can form up to 32 columns of separately defined characters for data displays.

Section 6. MAKING A RECORDING

No differences other than substituting K102-D in lieu of K101-D in the text content.

Section 7. RECORDING ANALYSIS

Paragraph 7.5.1 SELECTING VERTICAL DISPLAY LIMITS

When Graph Mode is first entered, the plotted data span all 32 channels in the range from 0000 0000 to FFFF FFFF.

Paragraph 7.6 TIMING DISPLAY

The Timing display shows events across all 32 input signals over time.

Paragraph 7.6.1 VERTICAL DISPLAY EXPANSION AND PAGING

All 32 inputs may be viewed by paging up or down.

Section 8. APPLICATIONS

No differences are present other than substituting K102-D in lieu of K101-D throughout the text and disregarding data references to Section C input conditions in illustrations and displays.

Section 9 COMMUNICATIONS

(Differences are the same as described for Section 8)

Section 10 MEASUREMENT CONFIDENCE

(Differences are the same as described for Section 8)

Section 13 GLOSSARY

No differences are present other than substituting K102-D in lieu of K101-D throughout the text, and specifying 32 data inputs supplied by Section Inputs A and B.

Section 14 INPUT CONNECTION GUIDE AND SETUP GUIDE

Paragraph 14.2 INPUT CONNECTION GUIDE

No differences are present other than substituting K102-D in lieu of K101-D through the text.

Paragraph 14.3 SETUP GUIDES

d. Data Format: For fixed formats, the instrument determines the radix and inputs for you. Simply copy the fixed format onto the form. There are 32 columns available.